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A TREATISE ON

MILK

AND

HENRI NESTLÉ'S

MILK FOOD,

FOR THE EARLIEST PERIOD OF INFANCY AND IN LATER YEARS.

BY

H. LEBERT,

MEDICAL PRIVY COUNCILLOR AND PROFESSOR.

PUBLISHED BY
HENRI NESTLÉ, VEVEY, SWITZERLAND.

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PREFACE.

The present epoch of medical science is remarkable for the pains taken by the more advanced physician to contribute to the improvement of the public health and to discover means whereby disease shall be averted, not only from the individual, but from whole populations.

Such means naturally affect the entire manner of living of the human being from birth upward; and seek to regulate it in exact accordance with the latest scientific progress.

In this field, the greatest progress has, without doubt, been made in the study of the chemical composition of the constituents of food, the comparison of the properties of these with their physiological action on the one hand and with the nutritive wants of the system on the other. The result has been a most valuable contribution to the improvement and conservation of health.

As regards the action and importance of the constituents of food, I have been for a long time particularly interested in the physiological action and medical application of milk. My work on the proper place of milk and whey in medical treatment, published in 1869, has met with such a favorable reception that I have been encouraged to prosecute my inquiries. Discovering in whey a most unsatisfactory substitute for milk and finding, too, that the latter, under many conditions, is difficult to be had of good or even uniform quality, the importance of examining the different substitutes for it was self-evident. In such an examination the necessary postulate was, to find a compound uniform in its properties, palatable, easily digested and containing in a condensed form the principal

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constituents of milk. The need of such a substance in the earliest period of infancy and during the time the child requires the breast, had become a pressing necessity.

From the beginning, the most suitable form seemed to be that of a powder, but this was at the same time the most difficult to obtain. When, therefore, after much experimenting, an able chemist, Henri Nestlé, of Vevey (Switzerland), had solved this problem, his milk food was soon extensively employed in medical practice and more particularly in the nursing of infants requiring the breast.

An additional ground for the favorable reception of this valuable preparation at the hands of the better class of physicians may have been its coming to them in simple form, without the least hyperbolical praise.

Thus it was that, visiting Vevey, I took particular pains to obtain a thorough knowledge of Henry Nestlé's manufactory. In this way I have convinced myself that the substances used in the preparation of the milk food are of the best quality and that the methods and mechanical appliances adopted rest on strictly scientific principles and correspond to the latest positive date of mechanics and chemistry.

I am of opinion, therefore, that in communicating, side by side, the results of my investigations regarding the milk of the woman and domestic animals on the one hand and of Henri Nestlé's milk food, its preparation and action, on the other, I shall be of some service to my professional brethren. The adoption of this milk food corresponds the more to a want of our time, as from year to year the difficulty of nursing and of getting good wet-nurses becomes greater and the disadvantages attending the employment of wet-nurses are being more seriously felt by physicians and families.

In order to make the whole of this explanation of milk and milk food more perfectly understood, I shall first of all briefly call attention to the nutritive wants of the human organism and to the composition and action of the constituents of food; and then pass on to the main subject of this work.

ON THE NUTRITIVE WANTS OF THE HUMAN BODY.

The progress made in organic chemistry has taught us the absolute composition of the materials of food and the nature of nutritive substances. On looking at these results we cannot but admire human sagacity, which has been guided in its selection, preparation and combination of nutritious substances by a keen instinct. The results it has perfected more and more by many experiments, and has in a certain measure long anticipated science. Not less to the purpose has been the early adaptation of man's food to the different stages of his life, to the various differences of climate and to the possibilities of local production.

While science on the one hand has served to increase chemical knowledge, it has on the other hand no less endeavored to subject the morphological and chemical nature of all parts of our body to a searching examination. Thus can be determined what substances should be introduced into the body to form its different parts, to sustain it and at the same time to develop the proper heat necessary for the processes of conversion and change of the materials introduced.

We are to-day in a position to guide the nourishment of the body from the moment of the child's first contact with the outer world; not blindly as dictated by empiricism nor yet according to the prejudices of ignorant self-sufficiency, but in accordance with well-ascertained principles; and does not the great mortality among children, in the first period of life, indubitably prove that this stage of human development can least of all dispense with the light of science?

Among the substances most necessary for the preservation of life, the albuminous hold the foremost place; and the different kinds, fibrin, albumen, casein, are capable of taking the place of each other. The animal kingdom contains these substances in much greater abundance than the vegetable kingdom, but we can derive them from both. Moreover the herbivorous animals concentrate for us the albuminous substances of vegetables; and indeed present us with these nutrient matters not only in a more compact form but also in the agreeable guise of juicy meat. Among the bodies derived from the albuminous group, protagon occurs, a gelatinous substance, possessing nourishing properties, but in much smaller quantities than albumen, fibrin or casein. Fatty substances are capable of assimilation to form fat, such are: oleine, palmitine, stearine, and brytirine, the fatty substances of butter and of milk. The hydrates of carbon, which are not less necessary for nourishment, are received into the stomach as starch, dextrine and the different sorts of sugar. By the digestive organs they are mostly transformed into glucose and thus become more easy of digestion.

Of inorganic substances water is above all the most necessary and is introduced into the stomach either direct, in beverages, or with the solid materials of food, which contain more or less water. The most necessary inorganic saline substances are the alkaline chlorides and phosphates; especially the phosphates of lime, magnesia, soda and potash and in smaller quantities the alkaline carbonates, earthy carbonates, combinations of iron and fluorine.

Most materials of food contain these substances, but in very different proportions. Meat is especially rich in albuminous, that is, nitrogenous substances, which, except, in pulse and wheat, are much less abundant in vegetables, while hydrates of carbon and fatty substances are present in these in abundance. The egg forms, in a certain measure, a chemical intermediate between highly albuminous food, and food rich in fat or in hydrates of carbon. In the same way milk and the various species of grain, form food rich in nitrogen and in hydrates of carbon. The various saline substances necessary for the body are also very unequally distributed, so that already in this respect we find a certain variety in food conducive to health. Meat is richer in phosphates and kali-salts than vegetables; and milk contains more alkaline chlorides and earthy phosphates. These very important saline substances exist among vegetables in insufficient quantity as in all kinds of corn, rice and potatoes, while they are present in abundance in the otherwise less nutritive green vegetables. Pulse is rich in saline matter and of all vegetables it contains most nitrogen in the form of albuminous substances. Water is a very necessary fluid for the body, acting as a solvent or medium for the decomposition of saline substances and contributes direct to the system, though in small quantities, lime with chlorides and sulphates. Wine supplies the body not only with the small useful contingent of alcohol, but also with the acid tartrate of potash, carbonic acid and sugar.

The following tables present a concise view of the chemical composition of several of the most important animal and vegetable materials of food.

MATERIALS OF ANIMAL FOOD.

(According to a Comparison by Moleschott.)

In 1,000 parts:	Mammals.	Birds.	Fishes.	Vertebrate Animals.	The Egg of the Hen.	Milk.
Water	728.75	729.83	740.82	720.06	735.04	861.53
Albuminous Substances	174.22	202.61	137.40	128.20	134.34	39.43
Gelatine	31.59	14.00	43.88	37.38	....	....
Fatty Matter	37.15	19.46	45.97	35.04	116.37	49.89
Hydrates of Carbon	....	....	...	....	....	43.23
Extractives	16.90	21.11	16.97	65.26	3.74	....
Saline Substances	11.39	12.99	14.96	14.06	10.51	5.92

MATERIALS OF VEGETABLE FOOD.

In 1,000 parts:	Corn. (According to Payen.)	Potatoes. Average Figures (According to Liebig.)	Red Beet. According to Horford and Kroker.)
Water	150.00	760	822.50
Albuminous Substances	132.50	10	20.40
Starch	608.80	180	....
Sugar, Dextrine	54.80	....	122.60
Cellulose	26.60	40	25.60
Fatty Matter	16.80	....	....
Saline Substances	12.50	10	8.90

An analytic view of the ashes or mineral residue of food has for our purpose less value and may be found in works on physiology and organic chemistry. Two other tables, however, are necessary here; one to show the mean value of the common articles of food; another to exhibit the relation of the nitrogenous constituents to the non-nitrogenous.

Moleschott and Voit have determined the relative quantity of substances which a full-grown working man consumes daily. Moleschott's figures refer to the mean results of different authors; Voit's numbers to the normal nourishment of the Bavarian troops. The daily consumption of the different nutritive substances is:

	According to Moleschott. (Avoirdupois.)	According to Voit. (Avoirdupois.)
Albuminous Substances	4.58 ounces.	4.69 ounces.
Fatty Matter	2.95 "	3.52 "
Hydrates of Carbon	15.14 "	11.43 "
Saline Substances	1.06 "	.... "
Water	96.76 "	.... "

The relation of the nitrogenous to the non-nitrogenous constituents is, according to this, nearly as 1 to 3.7. The daily consumption of carbon amounts to 11.28 ounces, of nitrogen to 10.29 ounces.

In the daily rations of the Hessian troops, Liebig reckoned only 2.68 ounces of albuminous substances and 15.79 ounces of non-nitrogenous constituents; and the mean consumption of inmates of English prisons was determined by Playfair at 2.12 ounces of albuminous substances and 15.16 ounces of hydrates of carbon and fatty substances.

We see from these figures, to which others might be added, that the amount of albuminous matter contained in food may vary in a greater degree than the quantity of the non-nitrogenous constituents employed.

The relation of the nitrogenous constituents to the non-nitrogenous in single articles of food is as follows:

Woman's Milk	1:3
Lentils and Peas	1:2
Hare	1:2
Beef	1:1.7
Pork	1:3
Veal	1:1
Flour	1:4.6
Oats	1.5
Rye	1:5.7
Potatoes	1:10
Rice	1.12

I will now complete these synoptical tables by some general remarks on the constituents of food.

Animal food is the richest in albuminous substances; next corn products, pulse, and milk, while 5 or 6 times as much potatoes or rice is required to give the same nutritive value as these highly nitrogenous substances. On this account also game and lean meat are much more nutritive than fat meat. That the whole body may be properly nourished, it is necessary that the food should consist of a due combination of nitrogenous and non-nitrogenous materials. Plastic, highly albuminous materials, give strength and energy, while those possessing hydrates of carbon supply the material for the process of combustion, which in the human body regulates the conversion of the substances, and produces heat. Moreover these are also necessary because the elements of fat, those of the central nervous system and other parts of the body, require the hydrates of carbon for their maintenance.

While food of too nitrogenous a nature predisposes to gout, gravel, and other diseases, that which is too poor in nitrogen does not sufficiently sustain the strength of the body, balance between plastic and heat-producing food, which maintains intact the equality of our functions, our strength, and, in a word, our health.

The power of hydrates of carbon in producing combustion, through combination of their products with oxyen, determines also the quantity of their combustible elements in relation to oxygen, which is necessary to their combustion. The descending series is as follows: fat, cane-sugar, grape-sugar, milk-sugar, brandy. One pound of fat produces just as much heat as 2 to 3 pounds of starch or sugar, and 6 to 8 pounds of meat.

The above-mentioned substances serve, in a certain measure, as agents of the organic processes producing plastic power and heat, both necessary, especially in co-operation, for the maintenance of health. The plant receives the saline substance from the soil, the herbivorous animal from vegetables, and thus bread, meat, and vegetables contain enough saline substances for a normal nutritive supply. The digestion of the food in the stomach bears a great resemblance to our chemical analytical procedures. The decomposition, at first watery, then acid, then alkaline, affects many bodies which we are obliged to assimilate and the oxygen then burns the combustible substances.

The non-nitrogenous substances, before leaving the body, are changed into carbonic acid and water, the plastic into urea, uric acid and hippuric acid, the sulphur into sulphuric acid. The kidneys and alimentary canal eliminate the unused products of combustion and the alkalies of the food. The kidneys separate the decomposible products, the alimentary canal the non-decomposible. Meat and bread give the urine more alkaline phosphates; vegetables, roots, and fruit more carbonates.

Common salt does not, as has often been imagined, increase the production of flesh, but wards off the hurtful influences of fattening, and gives the animals destined to be slaughtered a more healthy appearance, more liveliness, better hides, etc. In like manner common salt is useful to man and contributes greatly to the alkaline reaction and constitution of the blood and aids its attraction of fluid substances through the coats of the blood vessels.

The art of cooking, so much abused by gourmands and persons of vitiated appetite, has nevertheless, as we have already stated, anticipated science in discovering a series of very rational rules for the suitable preparation of the materials of food, such as soup, roast meat, and the perfect softening of the cellular matter of pulse, so rich in nutritive substances.

Besides the really nutritive substances, we also require stimulants, which of themselves contain no nourishment, but aid digestion and operate beneficially on the nervous system. In addition to spices, common salt, as we have seen, has partly this effect. In the category also belong tea, coffee, chocolate and alcoholic beverages. Of course stimulants work beneficially only so long as they are not too strong and are taken in moderation.

According to the foregoing tables, we have seen that a man consumes, on an average, from 20 to 24 ounces of nutritive materials in 24 hours, of which, for a normal sustenance, about one-sixth should be nitrogenous. Our constitution possesses great elasticity, which enables it to thrive in cases of minute change of this proportion. According to the use made of his strength, to weight of his body, to his habits, to the possible condition of the materials of his food, man can adapt his nourishment to meet circumstances. Should this nourishment differ too much from the proper proportions, the result of the discrepancy if long continued will result in debility and insufficient nutrition of the body. In England it has been long understood that the well-fed factory worker is capable of incomparably more work than the average or ill-fed body. On the suitable nature of the nourishment in infancy depends, possibly, the life of the child; but in any event, the well-being of whole generations and of entire populations.

MILK AS FOOD AND ITS CHEMICAL COMPOSITION WITH REFERENCE TO THE HUMAN BODY AND ESPECIALLY TO THE EARLIEST PERIOD OF INFANCY.

Our general survey of the materials of food has shown us in milk an excellent combination of nutritive substances, which is, however, much better suited to build up the system in the first period of life than to sustain it in health and strength in after life. Indeed the habits of man and vertebrate animals show us that, in earliest youth, they are thrown exclusively on milk food only so long as their mouth is without teeth and the glandular apparatus imperfectly developed.

Thus the vertebrate animal abandons the breast of the mother as soon as with its teeth it can sufficiently masticate its food and the latter by means of the secreting juices can be efficiently acted on.

But what, on the other hand, would become of the child in the first months of its existence, if milk were wanting, or if there were no means of converting this, by a suitable mode of preparation, into an unvarying and easily digestible preparation, which should serve in all cases as a substitute for it, as is the case with Henri Nestlé's Milk Food?

Milk is the simple product, the condensed quintessence, of 30 to 50 pounds of vegetable food, which the cow must daily consume to supply about 6 gallons of milk. And even here, we have more than a simple condensation; it is rather a complicated exchange of materials and an excellent mixture of many substances. If we now take into account the fact that eight-ninths of milk is water and one ninth nutritive matter, we wonder how the herbivorous animal extracts from the half hundred-weight of vegetables the small quantities of casein, fatty matter, milk-sugar and saline substances, which, in the best combination, partly dissolved in water, partly finely distributed, supply a product such as in spite of our knowledge a chemical laboratory could never produce.

Passing on to other details regarding the milk of the different domestic animals, we must first of all glance at a table containing the mean results of many analyses according to Gorup-Besanez.

In 100 parts.	Milk of the					
	Woman.	Cow.	Goat.	Sheep.	Ass.	Mare.
Water	88.908	85.705	86.358	83.989	91.024	82.837
Casein	3.924	4.828	3.360	5.342	2.018	1.641
Albumen	.....	0.576	1.299			
Butter	2.666	4.306	4.357	5.890	1.256	6.872
Sugar of Milk	4.364	4.037	4.004	4.098	5.702	8.650
Saline Substances	0.138	0.548	0.622	0.681		

Of these different kinds of milk, that of the ass is poorest in solid constituents, containing about 9 per cent.; then comes woman's milk with 11 per cent.; then the milk of the sheep with

16 per cent. (still more, according to results in my laboratory) than mare's milk with 17 per cent. The milk of the cow supplies not only the best average kind as regards the quantity, but also as regards the quality of the solid constituents and affords a better and more digestible nourishment than the milk of the mare with 17 per cent.; of which almost half consists of milk-sugar and saline substances, while the substances of the first rank, the albuminous, are contained in much smaller proportion.

We can, therefore, say of asses' milk that it may indeed be therapeutically suited to weakened stomachs and sub-inflammatory cases, but cannot be thought of as the proper food for the earliest period of infancy. Moreover the milk of the mare, obtainable only with difficulty, stands in nutritive value far behind that of the cow and much lower than sheep's milk. Nor is it suitable as nourishment during the period of wet-nursing, being too fat and too rich; although in Silesia it rendered me therapeutically good service in cases of exhaustion and consumption. There, by reason of the thriving wool trade, one can easily obtain sheep's milk and employ it in medical treatment. In the earliest period of infancy, however, its use will always remain quite exceptional. We shall, therefore, on a comparison of the principal constituents of the different sorts of milk, be always more and more under the necessity of singling out for our present purpose the milk of the woman and that of the cow and comparing them with each other.

If we cast another glance on the composition of the different kinds of milk, we find casein and albumen holding the first place. Woman's milk has 4 per cent. casein and only traces of albumen, while the milk of the cow contains 5 per cent. casein and 0.6 per cent. albumen; hence the milk of the cow excels even the plastic richness of sheep's milk, which contains indeed a little more albumen but less casein. Richest in plastic substances is goat's milk, as regards albumen, but it is nearly 1.5 per cent. poorer in casein, which is, however, the principal albuminous substance in milk. Asses' and mare's milk contain, the one 2 per cent., the other hardly 1.6 per cent. of nitrogenous substances. The nutritive value of both as nourishment during the earliest period of infancy is, therefore, of no account: although they are not without their therapeutic valne.

Woman's milk contains 2.6 per cent. butter and is therefore only moderately fatty, more so, however, than the milk of the ass, but much less so than that of the cow with 4.4 per cent. milk globules and fat. In its entire composition, the milk of the cow is not too rich for the organs of the new-born child; on the contrary, through its richness in hydrates of carbon, it is very important and valuable. Again, goat's milk with 6 per cent. butter and sheep's milk with 7 per cent. are too fat for the usual digestive powers of the infant. The milk of the cow contains not only the greatest nutritive value, but offers also a balance in nutritive substance sufficient to give the infant most suitable nourishment.

Woman's milk contains a little more than 4 per cent. milk-sugar and so also does the milk of the cow, the sheep and the goat: on the other hand, the milk of the ass has about 6 per cent. and that of the mare about 8 per cent. The latter are therefore most suitable for the preparation of fermented liquors, among which koumiss has obtained a high reputation. But the milk of the ass, as of the mare, is on this account unsuitable as nourishment during the earliest period of infancy, because it is too poor in nitrogenous substances and too rich in sugar of milk.

The saline substances exist in woman's milk in too small a quantity, scarcely 0.14 per cent., and is only a little behind the still somewhat greater amount of saline matter contained in the milk of the goat and sheep.

If, after all these details, we now place the milk of the woman and the milk of the cow together, for the sake of comparing them, we can characterize each according to their component parts.

Woman's milk with its 11 per cent. solid substances contains a good mean quantity of casein, 4 per cent. relatively not much butter, 2.7 per cent, about 4.4 per cent. sugar, and only 0.14 per cent. saline substances. This milk is therefore little concentrated, highly nitrogenous, easily digestible and thus very suitable to the health and growth of the human body in the earliest period of infancy. It is undoubtedly very plastic and, therefore, productive of strength, but still intended for a system originally weak and easily disposed to digestive irregularities. The extraordinary poverty of the milk of the woman in saline substances, instinctively leads the mother to give the child, at an early stage, other food in addition to her own milk, especially such as contains flour and is rich in hydrates of carbon. Woman's milk is admirably suited to induce regularity of the evacuations of the alimentary canal in the first months of life, without provoking them in too high a degree. The strong alkaline nature of the milk counteracts the disadvantages of the superabundant amount of acid in the secretions of the stomach. Its specific gravity varies between 1.030 and 1.034.

The milk of the cow is, of all kinds of milk, the one that comes next to that of the woman; it is, however, richer in matter, 14 per cent. being solid constituents. Its specific gravity attains 1.031. Among the 5.4 per cent. albuminous substances, the 0.6 per cent. albumen is especially valuable. The plastic power of this milk is therefore very considerable; and with its richness in butter, 4.3 per cent., the equilibrium of this plastic power is maintained by a corresponding amount of hydrates of carbon. The richness in saline substances is very serviceable to nourishment. The milk of the cow is, in consequence, not only an excellent substitute for woman's milk but often preferable to it.

Let us not forget also that, in general, richness in hydrates of carbon increases the plastic power, by lessening the waste of urine and the combustion of nitrogen, thus maintaining for the wants of the body a greater quantity of nitrogen, capable of being employed in its preservation and development.

It is thus a matter of fact that the milk of the cow is in every respect more nourishing than that of the woman and hence it is not strange that there are whole populations who nurse their infants with cow's milk. This was the case in the Canton of Zurich at the time I was Professor of Clinical Medicine there. Also in Silesia, I have repeatedly had new-born children nursed with the milk of the cow, with the best results, when the mother had no milk. The contrast was often a very striking one, to see how children, who had become weak through different unsuccessful trials with nurses, who, when fed with cow's milk, became strong and healthy. I must, however, here declare as an abuse, the dilution of milk for infants, usually with equal parts of water or sugar and water. The milk of the cow contains indeed only 3 per cent. solid constituents more than woman's milk. A slight dilution with water would be advantageous, but the sucking child easily digests cow's milk, even when pure, provided it is of good quality and comes always from an animal equally well fed. In the beginning, the child is sooner satisfied and takes somewhat less, at a later period it is equal to relatively larger quantities. Of course it is not always easy to get cow's milk pure and of good quality. Of this more anon.

We must here at once remark that milk, as the sole food, is only suitable so long as all the parts of the digestive system are not perfectly developed. In the case of grown-up persons, I am sparing of exclusive milk treatment. I order for consumptive persons an ample supply of milk, as being naturally an excellent nutritive auxiliary, but only together with other suitable food. In severe cases of derangement of the stomach, I have often seen very good results from exclusive milk diet. But even here I limit it as soon as the invalid begins to be able to take other light food.

OF THE DIFFICULTIES OF OBTAINING GOOD FRESH MILK, THE DISADVANTAGE ARISING FROM WET-NURSES AND THE ADVANTAGES OF THE MILK CONTAINED IN NESTLÉ'S MILK FOOD.

In proportion as civilization increases it will always become more difficult for newly-born children, especially in cities, to be brought up at the mother's breast. Among the well-to-do classes, the mother often has not sufficient milk, or rather not a sufficiently continued supply, for the proper nourishment of her child. The physician is often obliged to forbid the mother to suckle her infant on account of previous illness, of hereditary disposition to disease, of debility during the lying-in-period, etc. In many cases the causes of not nursing a child are of a less justifiable nature. The mother loves pleasure; she cannot or will not withdraw herself from the so-called duties of society. She does not nurse her first child to avoid sacrificing the pleasures of the day and the repose of the night. In every successive case of pregnancy, even in the absence of selfish calculations, the mother has always less milk and always more pretexts to intrust the care of her tender offspring to a stranger, who, often inexperienced and almost always indifferent, neglects or imperfectly promotes the well-being of the child.

Still greater are the difficulties of nursing an infant among the lower and working classes of the population. The disadvantages are not so great among populations employed in agriculture, the cultivation of the vine, or the rearing of cattle. Even among these, the woman always shares, in a great degree the labor of the man. Social considerations do not prevent the mother from suckling her child, but there exists an error in considering the health of the denizen of the country as better than that of the inhabitant of the town. The nature of diseases only offers a different type. In the country, there exists the necessity for much bodily exertion. The consumption of food compensates for the waste of strength in the woman, but gives insufficient material for the double support of the mother and the growing child.

Still worse is the state of matters in factory populations, whether the female workers weave cotton, flax, wool, etc., in factories or at home; in addition to such work, the wife has her household duties and other small matters to attend to. One who has, like me, lived long as a practicing physician in the country, knows that the lot of the woman there is a still less favored one than in towns. Even the doubtful help of wet-nurses here falls to the ground. Hence also in the case of country populations, the nursing of the infant by the mother is fraught with difficulty.

Are wet-nurses, then, of such utility as one might imagine at first sight? In reference to this, I have, in the course of an already long medical practice, seen matters gradually become worse. In my youth, people had far less difficulty in procuring good nurses. On practicing afterwards in Paris and devoting myself to cases of accouchement, I experienced little difficulty in selecting a good wet-nurse in the then existing establishments for procuring them. These persons were mostly married women in good health, who, being in poor circumstances, submitted to leaving their families for a time. But even under such favorable conditions, I had but too frequent opportunities of seeing the disadvantages of the wet-nurse system, especially as regards the health of the child. At that time, as now, the abuse existed, on the part of many mothers, especially in Paris, of intrusting their new-born infants to nurses in the country; and I have seen as the result great evils, such as illness, disease, and even the early death of the infant, so that I cannot sufficiently cry out against this absence of maternal affection.

In the case of wet-nurses in the family I have from year to year noticed an increased difficulty in obtaining suitable persons. What experienced physician can contradict me when I affirm that too often the disadvantages of the wet-nurse system far exceed its advantage? At present it is not only difficult to find good wet-nurses in towns, but also in the country. Married women of regular habits and of good moral character, rarely make up their minds to take a situation as wet-nurse. There remains only a choice among mothers of illegitimate children. Without entering on considerations which lie beyond the field of practical medicine, I must declare that I have often been myself and have seen others sadly disappointed in these nurses. If a wet-nurse has an evident derangement in her health, she is of course immediately sent away; but how often exists, without outward marks, the germ of scrofula, of consumption, yes, even of constitutional syphilis, which, with a seemingly healthy exterior, betrays no outward marks. To the sad consequences of syphilis derived from the nurse in early infancy, I have too often had the misfortune of bearing witness. The wet-nurse has been imperfectly examined by the family physician. Outward appearances had deceived him. The later illness of the infant has been treated as scrofula, instead of being early counteracted by an energetic anti-syphilitic treatment. Thus I have often seen children at the time when the flat and broad nose already pointed to the loss of their osteological supports and peculiarity of speech to loss of palatal substance, which on examination proved to be derived from the nurse. Thereafter remain, even in the best, but too-recently treated cases, the deceptive and treacherous consequences of syphilis, a life-long inheritance of suffering for the unhappy victims.

The germ of consumption so widely spread among the poorer classes of the people, whence the supply of wet-nurses almost exclusively comes, has often taken root in those nurses, without its being possible to perceive, even on a strict examination, the symptoms of the disease; and yet, further observation shows that this germ has existed in full development during the period of the wet-nursing. We forbid the mother to suckle her infant if the slightest tendency to consumption has shown itself in her family, and we intrust her child to a nurse, who already carrying within her the destructive germ, shows gradual symptoms of the disease, or becomes ill only after the wet-nursing is finished, having already implanted the seeds of the disease in the infant. What I here affirm is not the theoretical result of study, but of a series of positive experiences.

Even if we succeed in finding a wet-nurse, who on the strictest examination and after the most careful inquiries is known to combine with a good physique all the characteristics attending a satisfactory state of health, confirmed too by the testing of the milk, the difficulties are not yet at an end. The infant sucks well and remains a long time at the breast of the wet-nurse, perhaps too long. The mother contemplates this with satisfaction, yet is surprised that the child does not wet its underclothing. In such cases, closer observation almost always shows that the child gets milk only in its first attempt to obtain it, that the nurse has such a limited supply of milk, the child can discharge but an inconsiderable quantity of urine. The wet-nurse knows this, but takes care not to say so; and as such nurses, even with the best food, never get enough milk, they are dismissed; thus valuable time has been lost in the child's nursing. Of course the midwife and the sick-nurse have "good" wet-nurses to recommend; these the experienced physician chooses with extreme caution.

When parents find the health and growth of the child really suffering and have had the courage to change the wet-nurse three or four times, they must have recourse at last to another kind of nursing.

Moreover the wet-nurses have carried their pretensions so far that, from a financial point of view, none but families in easy circumstances can employ them and thus only a small minority of infants can enjoy the doubtful advantage; for this reason, if for no other, the substitution of cow's milk or of a suitable milk food is very desirable. Among the different kinds of milk of domestic animals, that of the cow is the only one we have become acquainted with which is serviceable as food for infants; seldom can goat's milk be employed, hardly ever the milk of sheep.

It is greatly to be regretted that numerous difficulties stand in the way of the general adoption of cow's milk. To nurse the sucking infant in the earliest period of life with good results by means of cow's milk, it is necessary that the milk be of most excellent quality, from one carefully and regularly well-fed cow and, above all, that the cow be healthy. Among cows lung disease is not rare ; this exercises a baneful influence on the milk. In cities it is much more difficult than in the country, to get good milk for the period of earliest infancy. But both in town and country, particularly in districts on the coast, there is often difficulty in getting milk even at a considerable cost. Indeed in the most favored mountain districts a great number of the cows are during summer on the heights and just cows enough are left in the lowlands to offer the stranger an adulterated watery mixture. Even in Switzerland, the land of the best milk, as soon as the stream of travelers sets in from other countries, one can often bear witness to these facts. How difficult does it then become, to obtain good milk for the tender infant.

The disadvantages, however, of adulteration and dilution are in general very widely spread and already form a just subject of complaint in small towns as well as in the country. Dilution not only weakens the nutritive strength of the milk considerably, but also imparts to it all the disadvantages so frequently connected with drinking-water. It is a fact, that through the imperfect closing of wells and the consequent infiltration of sewage drinking-water often becomes the cause of many infectious diseases, notably typhoid fever and cholera. In my mind there exists no doubt, that as soon as the organic germs of these diseases get into drinking-water, the mixture of this water with milk may spread typhoid, cholera, and other epidemics. By long boiling most of these germs are of course destroyed. But we know with what carelessness, as regards temperature, boiling takes place in most households and, also, that unboiled milk is preferred to boiled.

We are, consequently, always led back to the necessity of possessing a substitute for the milk of the woman and of the cow, which may be easily obtained everywhere and always of the same uniform quality, both rich in nutritive substances and easy of digestion, as well as especially adapted for the support and growth of the infant.

Before going further, I must here combat the prejudice that, when the mother can really suckle the child, every other kind of food is to be carefully avoided. The mother has often an abundant supply of milk only during the first six or eight weeks. In proportion, however, as the child grows and requires more nourishment, the supply of mother's milk decreases. To force the mother at this period to wean the child is irrational. The sucking child can readily take in connection with the mother's milk, cow's milk or milk food. Having had considerable experience as to this, I am in favor of partially feeding the child, especially when no particular consideration on the score of health stands in the way. Still I would have the mother suckle her infant, if only for a few months, as the normal recovery of the womb after the accouchement progresses more effectually and better than in the case of mothers who do not suckle at all. Many young mothers would avoid internal complaints, that, through the trouble they give, as well as through their treatment, are alike painful, if they would nurse their children for at least a few months.

Thus we find ourselves more and more under the necessity of recognizing the great advantages of Nestlé's milk food. And hence I have considered it of the utmost importance, by personal examination of Nestlé's manufactory, to assure myself that the product in question is in every respect valuable, and especially worthy of recommendation for the earliest period of infancy. It is not one of those industrial products which through the favorable action of chance have obtained a wide circulation. For myself, there exists no doubt that this composition is a thoroughly valuable one, undoubtedly based upon the science of biology, and of extraordinary value for the earliest period of infancy. Accordingly we find to-day among those who recommend this food, the names of hospitals, of physicians, and of chemists of the highest repute.

M. Nestlé, after demonstrating in his treatise the advantages of wheat prepared according to a new method with milk condensed in the form of a powder, explains that wheat offers a good mixture in a proper proportion of plastic and respiratory nutritive substances. The crust being much more nutritive than the crumb, Nestlé cites the opinion of all celebrated chemists regarding it, who declare crust to be twice as lucrative as crumb. The soluble part of the crust is much more rich in nitrogen than the juice of meat, especially owing to the high temperature of the baking oven which changes the gluten into a soluble substance.

Acting on these principles, Nestlé has produced a food the basis of which is pure Swiss milk, concentrated *in vacuo* at a temperature which preserves its freshness unimpaired. The crust, prepared according to a new method, is mixed with the powder in proper scientific proportion, so as to form, in this manner, a nutritive substance fulfilling every requirement.

Further details have been given me by the careful chemist of the manufactory, M. Christen, with the consent of M. Nestlé; of these, I mention the following:

The very large quantity of milk used daily comes fresh from the extensive dairies of the manufactory in the environs of Vevey. The milk, having been carefully examined and tested, is poured into an apparatus heated by steam, and evaporated *in vacuo* at a temperature so that, excepting condensation, the properties of the milk remain unchanged. The crust is prepared from the finest wheat, according to a peculiar method, which preserves the nitrogenous substances, so that the wheat employed in the preparation of the crust is rich in gluten. Moreover, as only the bread-crust, reduced to the finest particles, is employed in the preparation of the milk food, the richness in nitrogen is thereby increased. The extraordinary fineness of this mixture of milk powder and nitrogenous wheat greatly facilitates the digestion of this highly nutritive product.

The comparative analysis of crust and crumb, dried at a temperature of 230° to 239° F., and then treated with cold water, gave the following result:

	Crust.	Crumb.
Soluble substances	14.16	9.10
Insoluble	85.84	90.80

A comparison of the amount of nitrogen and ashes respectively therein contained, gives for 100 parts in a dry state:

Nitrogen	2.15%	1.92%
Ashes	1.45%	1.50%

A comparison of the soluble and insoluble substances gives:

	Crust.	Crumb.
Nitrogen in 100 dried soluble parts	7.777	2.345
Nitrogen in 100 dried insoluble parts	1.639	1.861

The soluble parts are, therefore, much richer in nitrogen than the insoluble, and this peculiarity reaches its maximum in the crust, already so nitrogenous of itself. Moreover the fact of the greater solubility in water is interesting. It is also an important fact that the soluble part of the crust contains 7 to 8 per cent. nitrogen, the soluble part of the crumb, on the contrary, only 2 to 3 per cent. The gluten of the crust becomes soluble at an applied temperature of 428° to 496° F. Wheat flour also has the advantage over other kinds, of being especially rich in saline matter, particularly in potash salts, for the most part in the form of phosphates.

Bases: Lime, potash, soda, magnesia, oxide of iron, and traces of alumine.

Acids: Phosphoric acid, sulphuric acid, hydrochloric acid.

1,000 parts of the milk food gives 2.15 phosphoric acid.

A mixture of one pound of milk food and three pounds of water contains in 1,000 parts:

Organic substances	232.77
Saline substances	4.875
Nitrogen	5.035

The milk food presents such a minute division of its constituents that, with the assistance of the microscope, I have seen a great many parts not exceeding the $\frac{1}{1250}$th part of an inch. Starch cells I find only in fractional parts, and in few is the concentric structure recognizable. This fine nature of the food renders it more easily digestible by the stomach of the infant, and facilitates its equal distribution in the water with which it is mixed.

As to the way in which the milk food should be used, the following advice of Nestlé's fully agrees with my own experience.

1 oz. of milk food to 10 ozs. of water gives milk of an agreeable taste and good composition. The sucking infant gets it into its bottle always fresh, and at the temperature of the body (37° C. or 98.6° F.). This mixture is sufficient for an infant of 1 to 2 months. Children of 3 to 4 months get 2 ozs. of food to 10 ozs. of water, and children of 5 to 6 months this quantity twice a day, older ones three times a day. Of course there exists no definite fixed quantity for all cases; as to the proportion and repetition of these quantities, one must be guided by the appetite and digestive powers. At Vevey, mothers who have not enough of their own milk, and are obliged to devote a great part of the day to their occupations, often combine the milk food with their own milk.

If the mother has no milk, the milk food is by far the best exclusive food for the child in the first months of infancy. In many cities of Europe and in distant parts of the world this food is already preferred to the milk of the cow or of the wet-nurse; through its cheapness it is obtainable by all classes of society, and therefore it is not only a good, but also a relatively cheap food for infants.

The milk food, by rendering wet-nurses unnecessary, possesses also the advantage of allowing the mother, who now has little or nothing to do with the actual suckling of the child, more time to attend to those other duties so necessary, such as cleanliness, watching during sleep, avoidance of contact with sick children, prevention of crying for hours together, care against catching cold, etc. Such things as these are too often neglected, and the chances of early death, already so considerable, are thereby increased.

Especially in asylums for infant children and foundling-hospitals, is the general use of the milk food a real benefit; for here particularly does the imperfect nourishment lead to the worst consequences. Hence several institutions of this kind have already adopted the milk powder as a nutritive food for new-born children brought up by hand.

I trust that, by giving to the adoption of this excellent milk food a more scientific status, I have shown of what extensive use, already recognized in so many quarters, it must become capable.

I should, however, consider this investigation incomplete if I did not draw particular attention to the great benefit to be derived from the use of the milk food as food for invalids of every age.

First of all is the advantage to be obtained from the use of the milk food after the lactation period, as, at least, a part of the child's food. In the often tedious convalescence of children after illness, scarcely a better kind of food could be given. Its use would, without doubt, be of especial benefit during those long feverish periods which, in childhood, are often maintained by protracted waste. However much the body may require strengthening in such circumstances, the stomach often rejects meat at such a time, while the milk food offers to these invalids a very favorable mixture of hydrates of carbon and nitrogenous substances.

The milk food can also be used as food for adults not only during convalescence, but also in those frequent cases of debility which require food at once nutritive and easy of digestion.

Among intestinal disorders are also some, during which the use of this milk food already begins to be extensively used, as indeed it ought to be; and there can be no doubt but that it will be employed still more widely. To these disorders belong the dyspeptic forms of gastralgia and stomach catarrh, chronic stomach ulcer, nervous vomiting; conditions in which I have seen the usual milk treatment give important results.

The favorable action of the milk food in cases of dysentery in early infancy, greatly encourages its use in cases of chronic intestinal catarrh in the later years of life.

Mothers who are nursing and wish to have plenty of milk, can scarcely add to their food, when otherwise well chosen, anything better than this milk food.

If the attention of practical physicians be once drawn to this extended application of the milk food, there can scarely be room to doubt, that in addition to its indispensable use in the earliest period of infancy, every successive period of life may be very beneficially acted on by its use in times of sickness and convalesence.

APPENDIX.

In the remarks on Nestlé's Milk Food already submitted, I have called particular attention to the fact that the food is not exclusively valuable for infants. In many adult cases, even to very old age, I know of no preparation of food which can be used with such certainty of result. Many local diseases of the stomach and intestines, as gastralgia, dyspepsia, chronic catarrhs and ulcers of the stomach, both in infants and adults, especially in those obstinate cases which seem to baffle all our best efforts, absolutely demand the use of the milk food. These remarks apply in a more special manner to the numerous morbid cases in which it is desirable to convey to the stomach an easily digested and assimilable food, having a restorative effect, so necessary during convalescence.

In tropical and semi-tropical countries there are other diseases, such as dysentery, which depend for cure very largely upon the food given to the patient. Improper food has a most weakening effect upon the digestive organs. In such cases I feel sure the milk food would prove its perfect adaptability, supplying the necessary strength and giving such tone to the system as to enable it to resist the disease.

H. LEBERT,
Medical Privy Councillor and Professor.

MEDICAL TESTIMONIALS.

We have selected the following from a mass of MEDICAL EVIDENCE received from various parts of the world, testifying to the merits of Nestlé's Milk Food as a diet for infants, children, and invalids.

UNITED STATES.

No. 97 North Charles St., Baltimore, Md., March 22, 1879.

For some years past I have prescribed Nestlé's Milk Food as a substitute for the natural nourishment, and have found it, in the large majority of cases, to answer admirably. Among the great variety of prepared foods in the market, intended expressly for children, I have found none of them equal to Nestlé's.
THOMAS SHEARER, M. D.

No. 146 Park Ave., Baltimore, Md., February 26, 1879.

I have used Nestlé's Milk Food with great benefit in many cases where other artificial foods have failed.
H. P. C. WILSON, M. D.

March 12, 1879.

Infants that have become emaciated from an inferior quality, or insufficient quantity of their mother's milk, when fed on Nestlé's Milk Food, soon become fat and thrifty. From the observations which I have made of it in the asylum, I am frank to say I believe it to be the most suitable artificial infant's food that I have ever used.
DAVID STREET, M. D., House Physician,
Maternité Hospital or Maryland Lying-in-Asylum, Baltimore, Md.

Baltimore, Md., April 23, 1879.

I have frequently ordered Nestlé's Milk Food for infants deprived of maternal milk, and found that it was readily taken, easily digested, and that there was a general improvement in the appearance of the children. The facility with which it is prepared for use, without the addition of milk, is very much in its favor, particularly in our large cities where the quality of the cow's milk cannot be relied on.
E. F. MILHOLLAND, M. D.

Baltimore, Md., April 26, 1879.

I think Nestlé's Milk Food one of the best preparations of the kind in use, and *particularly* adapted to children nourished by the bottle alone. I cheerfully commend it as a valuable article of food.
JAMES S. MACKENZIE, M. D.

Chicago, Ill., February 28, 1882.

I have used Nestlé's Milk Food for many years, and from careful experiments and analysis I am satisfied that it is a dextrine and milk food, and that it stands first in the rank of foods for infants.
T. C. DUNCAN, M. D., Clinical Professor of the Diseases of Children,
Author of "Diseases of Infants and Children," "Feeding and Management of Infants and Children," etc.

No. 112 East Monroe St., Chicago, Ill. April 21, 1879.

I have used Nestlé's Milk Food for ten years, and from personal experience place it in the front rank of children's food, and believe I am doing a benevolent act to our infant community in thus certifying.
R. L. REA, M. D.. Prof. Anatomy, Chicago Medical College.

No. 817 Wabash Ave, Chicago, Ill., April 11, 1879.

I have recommended it in every case where artificial food was required, and have every reason to be pleased with it. It is not always liked by the child at first, but in a day or two it is taken with avidity.
T. S. HOYNE, M. D., Prof. Materia Medica, Hahnemann Medical College.

No. 126 State St., Chicago, Ill., April 11, 1879,

I have only words of praise for it. Better nutrition or death has been the only possible condition in the cases of several little patients, and your milk food has enabled me to gain the better nutrition.
H. B. FELLOWS, M. D.

No. 972 WABASH AVE., CHICAGO, ILL., April 12, 1879.

I have used it extensively, and in a majority of cases have been better pleased with it than any other article of food for infants in the market.
G. A. HALL, M. D.

241 MILWAUKEE AVE., CHICAGO, ILL., April 12, 1879.

The sample of Nestlé's Milk Food left with me was given to a little patient suffering from indigestion and diarrhœa. The child was using a common nursing bottle containing the best milk obtainable, but was not thriving on it. They used the Milk Food and are well pleased with it, the child being now fat and healthy. I know of several who are using it with the same result.
F. A. HESS, M. D.

126 STATE ST., CHICAGO, ILL., April 16, 1879.

I have found Nestlé's the most satisfactory of all the artificial foods. The special point in its favor is that no milk and sugar are required in its preparation.
SARAH HACKETT STEVENSON, M. D.,
Prof. of Physiology, Womans' Hospital, Med. Col.

CINCINNATI, O.

I have used Nestlé's Milk Food in quite a number of cases of marasmus, cholera-infantum, diarrhœa, etc., with uniformly good results, and have found it an excellent food for even the youngest babes.
WM. CLENDENIN, M. D.

CINCINNATI, O. March 20, 1879.

In some families where it was given a trial, the little ones would *relish it* when they would *touch nothing else*, and the "big babies" in most families liked it so well during the summer that the little ones in our immediate family did not get their full quota.
S. W. COHEN, M. D.

INDIANAPOLIS, March 16, 1879.

We take pleasure in recommending Nestlé's Milk Food as being probably the best food obtainable for infants not receiving nourishment from the breast. In diarrhœa and dysentery it is received more kindly than any other food in the market.
DRS. O. S. and M. T. RUNNELS.

OFFICE OF BOARD OF HEALTH, INDIANAPOLIS, March 20, 1879.

I heartily recommend Nestlé's Milk Food personally and officially.
W. WANDS, M.D., Sec'y Board of Health.

INDIANAPOLIS, April 28, 1879.

I regard your preparation as a most suitable substitute for mothers' milk, an excellent food for delicate children and certain class of invalids. I know of many infants who have had no other food from their birth, yet have been more than ordinarily free from the usual diseases incident upon dentition and childhood.
A. B. FLETCHER, M.D.

INDIANAPOLIS, April 29, 1879.

I freely say concerning Nestlé's Milk Food, that it is the most complete and satisfactory food for infants and children, either manufactured or domestic, that it has ever been my fortune to use in my practice. I am certain that my success in the diarrhœal affections of childhood has been more satisfactory since the introduction of the aforesaid food. I now approach summer complaint with more confidence than formerly.
E. HADLEY, M.D.

MILWAUKEE, June 12, 1879.

For a number of years I have, on a large scale, been using Nestlé's Milk Food for a great many children as the only nourishment, where neither cow's milk nor any other artificial food could be borne by the stomach. From the good success I always had in my own experience, I can highly recommend it.
DR, JACOB MENDEL.

MILWAUKEE, May 22, 1879.

It gives me pleasure to state that I have used Nestlé's Milk Food in my practice, and that in several instances, and notably with a child of my own. I have found it to be retained, and to *agree with* a child who had rejected, or failed to be properly nourished by other kinds of food. It has the advantage, moreover, that children do not tire of it, but will take it for weeks without desire for change.
WILLIAM THORNDIKE, M.D.

MINNEAPOLIS, MINN., April 22, 1879.

Your Nestlé's Milk Food has proved to be all you claimed for it. I take pleasure in recommending it to the profession at large as the best article for its purpose in use.
P. L. HATCH, M.D.

PHILADELPHIA, PA., April 24, 1879.

In several instances I have been much pleased with the Food. In cases of weak digestion, I have observed it to prove of great value, and have employed it accordingly.
W. B. ATKINSON, M.D.,
Lecturer on Diseases of Children, Jefferson Medical College.

PHILADELPHIA, PA., March 4, 1879.

It is with great pleasure that I am enabled to add my testimony in favor of Nestlé's Milk Food. I consider it one of the best articles of food for sick children in the market.
W. H. HUTT, M.D., Supt. Free Sanitarium for Sick Children at Point Airy.

PHILADELPHIA, PA., April 1, 1879.

I have extensively used Nestlé's Milk Food in my practice, and regard it as a very nutritious and digestible article of diet. JAS. AITKEN MEIGS, M.D.

QUINCY, ILL., April 23, 1879.

I have had excellent results from its use in the treatment of children, and regard it as invaluable in the treatment of typhoid fever in persons of any age.
H. W. KENDALL, M.D.

ST. PAUL, MINN., May 24, 1879.

I regard this preparation as invaluable to the newly born, and consider it will, if properly used, lessen very materially the mortality from infantile disease.
A. WHARTON, M. D.

ST. PAUL, MINN., April 23, 1879.

I am pleased with its effects. I have used it in cases of infants who were run down by entero-colitis, and it seemed to be of great benefit to them, digesting easily, and being taken readily by the little sufferers. L. H. HEMENWAY, M. D.

ST. PAUL, MINN., April 19, 1879.

In cases of marasmus in children, cholera infantum, summer diarrhœa and dysentery, acute and chronic indigestion accompanied by faulty assimilation, and in all diseases of the digestive functions, or organic lesions, where a bland nutritious food was indicated, I found it filled general indications, and in special cases where all other foods failed, or were rejected by the stomach, or irritated the bowels, the Milk Food was not only tolerated but digested without distress to the patient; and I feel quite certain that in not a few cases the recovery of the patients was attributable mainly to the nourishment obtained from it.
DANIEL LEASURE, M. D.

GREAT BRITAIN.

SKINNERGATE, DARLINGTON.

The small quantity of food you sent me had a wonderful effect in stopping an obstinate case of vomiting and diarrhœa in an infant two or three weeks old.
I remain, yours very truly. GEO. MIDDLEMISS, M. D.. F. R. C.P.

TRAFALGAR HOUSE, TRAFALGAR ROAD, NEWPORT, I. W., Jan. 9, 1877.

You are quite at liberty to make use of the following: I have had two sons; both were born very delicate, and my wife was unable to nurse either. The first had every care and attention. We first fed it with Swiss milk (condensed), afterwards with the milk of one cow; the doctor and nurse did their utmost. but the poor little boy pined away and died of atrophy at two months old. My second son was fed first with the milk of the best cow in a first-rate dairy, but from its symptoms we became afraid it was destined to follow its brother; the doctor even expressed his fear that it would pine away as the first did. We several times felt we must give up all hope of its recovery, but a friend constrained us to try your Milk Food, which we did. For months since he has been fed solely upon the food, and has improved wonderfully.
A. JAMES.

16 HEREFORD ROAD, BAYSWATER, LONDON, July, 1877.

I have long been in the habit of ordering Nestlé's Milk Food for infants and young children, because I believe from its composition thai it is the very best substitute for mother's milk.

I am also of opinion that the food is useful for adults in many forms of dyspepsia.
HOLT DUNN, M. D.

LIVERPOOL, May 19, 1877.

I beg to state that I have frequently prescribed your excellent aliment with advantage in various stages of tuberculosis, etc. I consider it also a good food for infants at the time of weaning, and restorative in debility or convalescence from acute disease of children.
WILLIAM HITCHMAN, M. R. C. S., M. D., Univ. Erlangen, L. S. A.,
Professor of Natural Philosophy in the Galileo Academy, Naples.

6 York Place, Portman Square, W.

Contrary to my usual custom I add my testimony as to the advantages of your food to a very large number of infants who cannot obtain mother's milk. Its digestive and nutritious properties, when prepared with the proper consistence to suit the capacity of each infant stomach, are beyond all other preparations of the kind. I have no hesitation in saying by its means I have been enabled to save many infants who could digest no other food—cow's milk and Swiss milk included—and were in consequence dying slowly of starvation. I the more willingly speak thus highly of the food because I have used it from its very first introduction here, and in a long time with the deep mistrust with which I favor all new introductions of the kind.

PENNING BAKER, M. D.

Bolton Row, Mayfair, May 20, 1877.

I have watched the use of Nestlé's Milk Food in several cases with considerable satisfaction as Surgeon to a Children's Hospital. I hear so frequently, and see the ill effects of artificially prepared foods for children in the shape of eruptions on the skin, scrofula, rickets, etc., that I have hitherto steadily set my face against them altogether, and have recommended the use of milk, sugar and water only, or when more substantial diet is necessary, a judicious selection from the ordinary mixed diet of adults. As, however, there is great difficulty in towns of obtaining good pure milk and of keeping it sound during hot weather, the production of a good substitute is desirable at least for occasional use, and Nestlé's Milk Food is certainly the best which has come under my notice.

CHARLES ROBERTS, F. R. C. S., etc.

52 Montagu Square, May, 1877.

If you will refer to my work on "Infant Feeding," page 382. you will find I have expressed myself most favorably about your food, and that it answers its purpose most admirably.

C. H. F. ROUTH, M. D.

61 Welbeck St., Cavendish Square, W., May 19, 1877.

From the trials made here among children—one, a delicate invalid—with Nestlé's Milk Food, my opinion is that the food is digestible and nutritious, and well adapted to young children. It does not seem so liable to produce flatulence and acidity in a child's stomach as many farinaceous foods do; hence its great value in cases of intestinal catarrh and mucous disease in children. Within the last few days I have read the article on the "Food of Infants" by Professor F. A. Kehrer, of Giessen, in the German Chemical Lectures of the Sydenham Society, 2d series, and so far as my present experience goes I can quite concur in the very high commendation given by Professor Kehrer to Nestlé's Food.

JOHN C. THOROWGOOD, M. D., L. R. C. P.

Extract from Clinical Lecture by Professor . A. Kehrer, *of Giessen University.*
Translated by the Sydenham Society, 2d series.

Morpain made the first extensive series of experiments with this food of Nestlé's; he tried it on 100 poor children. The mortality which among such children had previously been from 50 to 60 per cent., was reduced to 20 per cent. under the use of this food. From the experience of this preparation in various parts of the world it may be asserted that it deserves to occupy a very prominent place among the substitutes for the natural food. During its use the development of the child certainly progresses; the food also very rarely causes any disorders of digestion but, on the contrary, is easily digested, and is likewise a remedy for any previously existing intestinal catarrh. I may add that children generally take it freely because of its pleasant taste. I can recommend to you this preparation as the next best thing to human milk, and especially for delicate children, with regard to whom you particularly have reason to fear that they will not bear any substitute for their natural food.

North Eastern Hospital for Children, London, December, 1876.

When the mother cannot or ought not to suckle her own infant, and in those cases we have, when the infant's stomach does not tolerate, or tolerates ill, the milk of domestic animals, I consider Nestlé's Milk Food (Lacteous Farina) to be one of the best substitutes for mother's milk. This is not only the result of my own experience at the North Eastern Hospital and elsewhere, but I have received similar reports from independent sources from the Continent, several of them before the food had been introduced in England. I have known a few instances in which life appeared to be preserved by no other human means than the use of Nestlé's Food.

W. BATHURST WOODMAN, M. D.

Sherstone, South Norwood Hill, S. E., April 15, 1876.

I have several times ordered your Milk Food, and especially for young children suffering from eczema of the scalp, with great benefit. Your food supplies a want. We needed a light, agreeable, nutritious diet which could be prepared without milk and which infants would like from the bottle. When thin it does not clog the bowels, and in infantile diarrhœa resulting from bad feeling I have found it very useful.

ALFRED CRESSWELL, F. R. C. S., Eng., F. R. C. P., Eng., M. R. C. P., L. S. A.

64 Upper Parliament St., Liverpool, April 12, 1876.

Dear Sir—I have much pleasure in expressing my unqualified approval of your Milk Food as a perfect diet and substitute for breast milk. A physician, a friend of mine, also writes me he has given the food in two cases of profound dyspepsia of infants with vomiting of the ingesta, and it proved eminently successful. In the chronic dyspepsia of adults I can strongly recommend it as a food which will support life, single-handed, and without offending the most delicate stomach; until the digestive power is restored, such patients are safe to limit themselves to your Milk Food. For adults I order it for breakfast and tea flavoured with a little essence of cocoa, and for dinner it makes an excellent pudding with one or two eggs, flavored with lemon or vanilla and served with sugar and cream. I look upon the Milk Food as quite a desideratum and great success.

THOS. SKINNER, M. D., Late Obstetric Physician to the Lying-in-Hospital.

Tulliallan, Crosby Road South, Waterloo, December 2, 1876.

It affords me much pleasure to testify to the great value of the food for infants which you have introduced. In common with most physicians, who have to treat the disorders incident to infancy, I have often experienced the difficulty of finding an aliment suited to the infantile digestive organs, and frequently, as a *dernier ressort*, I have been compelled to recommend the wet-nurse. When I assure you that on more than one occasion the Milk Food was assimilable when every other kind of nourishment was rejected, not excepting the wet-nurse's milk, I can scarcely render a higher testimony to its value. In cases of dyspepsia, in infants especially, I have found it, after repeated tests, to be invaluable.

I am, sir, yours truly,
THOMAS SIMPSON, M. D., M. R. C. S.,
Physician to Liverpool Homœopathic Dispensary.

GERMANY.

Berlin, March 8, 1871.

The Milk Food (Lacteous Farina), prepared by H. Nestlé of Vevey, has been submitted to extensive trials in the Royal Nursery, and has rendered so many salutary services that I feel myself bound urgently to recommend its use, particularly in large cities where fresh milk of good quality is wanting.
Professor Dr. MARTIN, Private Consulting Physician.

Berlin, December 24, 1870.

For the purpose of chemical analysis I received a sample box of Milk Food (Lacteous Farina), invented by H. Nestlé, Chemist, of Vevey, Switzerland. After careful examination in my laboratory, I find that this very useful and well-known nourishment for children and weak persons contains, in a very assimilable form, all the organic and inorganic elements which are necessary for the formation of the human body, and which are represented in mother's milk. From a chemical point of view I therefore recommend its use.

Dr. SONNENSCHEIN, Professor of Chemistry, Royal University.

Leipsic, 1871.

Either alone, or in combination with the mother's milk, I prescribe Nestlé's Milk Food as a food for infants, and in both ways find it to represent a most valuable substitute for mother's milk. Therefore I feel pleasure in recommending this useful preparation to the profession.

Professor Dr. CREDE, Private Consulting Physician.

AUSTRALIA.

Melbourne, September 2, 1875.

I very rarely give certificates recommending any article of food or medicine, but in this instance, the *high character of Nestle's Milk Food* warrants my departing from my usual practice. I certify that I have submitted Nestlé's Farina, imported into this colony by the late Dr. James Hester, to a very extensive trial as a food for children suffering from diarrhœa and other intestinal disorders. I have directed it to be used in the Industrial Schools, and the effect has been always very satisfactory, *Nestle's Food having been retained when all other food was rejected.* (Signed) WM. M. CREA, Chief Medical Officer.

Albury, New South Wales, September 25, 1871.

On the arrival of the late Dr. Hester, in Melbourne, I received a letter from him highly recommending the use of Nestlé's substitute for mother's milk, and, having several cases in which no food would agree, and actually brought to death's door, I immediately ordered a case of this food, and can only say that infants all took it eagerly and thrived admirably, no other food of any kind being used. I have since employed it extensively in preference to any other food, and can fully testify to its superiority. I may also add that in cases of extreme debility in adults as well as children, especially with gastric complications, I have found it beneficial.

J. KNIGHT BARNETT, M. D., Hon. Phys. to the Albury Hospital and Benevolent Asylum.

ITALY.

NAPLES, April 14, 1875.

I have tried Nestlé's Milk Food for infants and invalids and think it is my duty to declare that it merits the preference over all other products employed as substitutes for the mother's milk.
DR. J. MEYER.
Director of the Maternity of Naples, and Professor of Obstetrics, University of Naples.

MILAN, June 14, 1875.

Nestlé's Milk Food has been tried here in the Foundling Hospitals and Nurseries on a number of children of different ages, sex, and constitution, and we are able from the results of these trials to testify that the children take it willingly, digest it easily, and thrive on it. These results induce us to recommend Nestlé's Milk Food, for we have found it far superior to any other artificial food for infants.
DR. CARLO FRUA, DR. GAETANO CASATI,
Directors of the Provincial Foundling and Lying-in-Hospital at Milan.

MILAN, June 18, 1875.

Having recently made several trials with Nestlé's Milk Food on young children, I find that they digest it easily, and in no case has it caused either vomiting or disorder of the stomach. I have come to the conclusion and frankly admit that this food is not only agreeable and strengthening, but also greatly tends to keep children fed on it in good health. I may add that I find Nestlé's Milk Food preferable to all other artificial products for infants, and it is in every respect a food to be recommended.
DR. L. SAPOLINI,
Consulting Physician to the Royal Family.

FLORENCE, July 5, 1875.

I have much pleasure in certifying, after repeated experiments upon foundlings both in good and bad health, that Nestlé's Milk Food is the only one that should be used as a substitute for the mother's milk, and I find it best supplies our wants in that direction. This food is readily taken by newborn children to whom it is given; they digest it easily, are quiet, sleep well, and the intestinal functions being performed with regularity, evidently proves that they are in health. These results have never been so completely attained by any other product up to the present day. Humanity ought to be thankful to Mr. Nestlé, and I am sure that those who are most reluctant to approve of anything new (and I am one of them) will, after giving it a trial, contribute to do justice to the merits of his Milk Food.
DR. GIOVIANNI GATENI, Director of the Hospital of Innocents at Florence.

CANADA.

MONTREAL, August 6, 1877.

Nestlé's Lacteous Farina I consider a very excellent food for infants, and agrees well with a very large percentage. M Ziemssen's Cyclopædia of the Practice of Medicine (translated from the German, 1876), in Vol. VII., the writer on Sporadic Cholera speaks of the Food in the highest terms of commendation.
JOHN REDDY, M. D., L. R. C. S.

MONTREAL, March 6, 1882.

For many years I have used Nestlé's Milk Food almost exclusively as a diet for infants, and that too with continued satisfaction. Its value is so well established that it needs no commendation of mine to secure it a high, if not the highest place, among the various infant foods offered to the public.
E. H. TRENHOLME.

MONTREAL, April 10, 1882.

I have been in the habit of using Nestlé's Milk Food for several years, and I consider it an excellent food, nutritious and agreeable
ARTHUR A. BROWN, B. A., M. D.,
Prof. Practical Obstetrics, McGill Medical College.

TORONTO, April 12, 1882.

I may state that I have ordered Nestlé's Food very largely. It is in my opinion superior to any other form of artificial food for infants with which I am acquainted.
J. E. GRAHAM, M. D.

TORONTO, April 12, 1882.

I have been in the habit of using and recommending Nestlé's Milk Food during the last seven years. I have no hesitation in pronouncing it the best form of artificial food at present in the market
GEORGE WRIGHT, M. D.

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